

CLAIMS

We Claim:

1. A method for generating low delay video streaming, the method including the steps of:

5 inputting the bit rate desired for outputting the received video stream
into a buffer;
 determining the size of said buffer according to said bit rate;
 adjusting said bit rate; and
 repeating the steps of determining and adjusting thereby to output the
10 video stream at the highest bit rate consistent with optimum levels of quality
for a pre-determined period of delay.

2. A method according to claim 1, wherein said step of determining comprises the step of:

 defining the "Current_Pointer" position;
15 wherein "Buffer Pointer" - "Delta_Buffer_Pointer" < "Current_Pointer" <
 "Buffer Pointer" + "Delta_Buffer_Pointer".

3. A method according to claim 1, wherein said step of varying comprises the steps of:

 determining whether the "Current_Pointer" is within the range
20 appropriate to the current bit rate; and
 if the "Current_Pointer" is within said range, recording a plurality of
measurements of the time taken for a message from the server's transmitter to
the client's receiver and back again to the transmitter (RTT); and
 if the "Current_Pointer" is within said range, increasing the bit rate.

4. A method according to claim 3, wherein said step of varying further comprises the steps of:

if the "Current_Pointer" is lower than the increased current bit rate range, reducing the bit rate.

- 5 5. A method according to claim 1, wherein said step of varying comprises the steps of:

determining whether the "Current_Pointer" is within the range appropriate to the current bit rate; and
if the "Current_Pointer" is lower than said range, reducing the bit rate.

- 10 6. A method according to claim 1, further comprising the steps of:

assigning a header to a first frame of a series of frames of a video stream to be encoded;

allocating a period of time to said first frame before encoding, said period of time corresponding to the delay time of said first frame;

- 15 compressing said first frame; and

repeating said steps of assigning, allocating and compressing for each subsequent frame to be encoded.

7. A method according to claim 6, further comprising the steps of:

20 transmitting said encoded series of frames to a buffer located at the client site;

adjusting the size of said buffer in response to a dynamically varying bandwidth.

8. A method for smoothly displaying the frames of a video stream, the method including the steps of:

assigning a header to a first frame of a series of frames of a video stream to be encoded;

- 5 allocating a period of time to said first frame before encoding, said period of time corresponding to the delay time of said first frame;

compressing said first frame; and

repeating said steps of assigning, allocating and compressing for each subsequent frame to be encoded.

- 10 9. A method according to claim 8, further comprising the steps of:

transmitting said encoded series of frames to a buffer located at the client site; and

adjusting the size of said buffer in response to a dynamically varying bandwidth.

- 15 10. A method according to claim 9, wherein said step of adjusting comprises the steps of:

inputting the bit rate desired for outputting the received video stream into a buffer;

determining the size of said buffer according to said bit rate;

- 20 adjusting said bit rate; and

repeating the steps of determining and adjusting thereby to output the video stream at the highest bit rate consistent with optimum levels of quality for a pre-determined period of delay.